WESTERN ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM (W-EMAP) UPDATE - WINTER 2001

www.epa.gov/r10earth/emap.htm

PHOTO: Oregon Department of Environmental Quality Coastal EMAP Sampling, 2000.

INTRODUCTION

EPA's Environmental Monitoring and Assessment Program (EMAP) is designed to provide tools to monitor and assess the condition of the nation's freshwater and coastal systems. Western EMAP focuses on the aquatic systems and landscape features of the states encompassed by EPA Regions 8, 9 and 10. There are three major components of the Program - Coastal, Surface Waters (rivers and streams), and Landscapes. Another important feature of Western EMAP is the partnership between EPA and the States. All field data for Western EMAP in EPA Region 10 is or will be collected by the state environmental agencies.

EMAP was developed by EPA's office of Research and Development (ORD) to monitor status and trends in the condition of the nation's ecological resources at regional and national scales. Western EMAP represents a five-year effort by the EPA to advance the science of ecosystem health monitoring and to demonstrate the application of core EMAP indicators in environmental assessment. This update describes progress to date and future activities.

COASTAL

The coastal component of Western EMAP applies EMAP's monitoring and assessment tools to create an integrated and comprehensive coastal monitoring program along the west coast. Water column measurements are combined with information about sediment characteristics and chemistry, benthic organisms, and data from fish trawls to describe the current estuarine condition.

Sampling of small estuaries of Washington and Oregon was completed in 1999, by the Washington Department of Ecology (Ecology) and the Oregon Department of Environmental Quality (ODEQ). Sampling of larger systems (Puget Sound, Columbia River Estuary) was completed in 2000. An intensified study of Tillamook Bay, Oregon, that was integrated into the overall design was also conducted in 1999. The data from

1999 are back from the laboratories and data analysis is underway.

A cooperative agreement with the Alaska Department of Environmental Conservation (ADEC) has been put in place for sampling in Alaska. The sample design has been completed. Due to the exceptionally long coastline, the sampling for Alaska will focus on the south central coast (called the Alaskan Biographic Province). Fifty base sample sites will support a Province-wide assessment of condition while 25 intensive sites will support more detailed analysis of Cook Inlet and Prince William Sound. Sampling will be carried out in the summer of 2002.

SURFACE WATERS (Rivers and Streams)

Western EMAP applies tools developed by ORD to monitor and assess rivers and streams across the contiguous western U.S.. Water column measurements, physical habitat data, benthic macroinvertebrate, fish and periphyton assemblage data are combined to describe the current stream condition. Idaho Department of Environmental Quality (IDEQ), Oregon DEQ and Ecology will conduct the vast majority of sampling for Western EMAP in Region 10.

The Western EMAP surface water component is designed to evaluate the ecological condition of rivers and streams at two scales. One scale is at the broad regional and state level, which will allow us to evaluate the overall condition of rivers and streams by state. For this scale assessment, approximately 150 stream sites are in the process of being sampled in Idaho, Oregon and Washington over a 4 to 5 year period, beginning in 2000. In addition, over the same 4 to 5 year period, approximately 50 river sites will be sampled across these three states.

PHOTO: Washington Department of Ecology Surface Water EMAP Sampling.

The second scale is at a smaller localized level to better characterize the ecological conditions of streams and rivers in three focused geographic areas or resource types. These areas of intensification will be sampled over the same four year period as the broad scale sample sites. For streams, we will be

intensifying the EMAP sampling effort Deschutes and John Day basins of Oregon and the Wenatchee Basin of Washington. In addition, sampling of medium to large sized rivers will be intensified across the entire State of Idaho. The sampling of the Deschutes and John Day and Wenatchee basins began in 2000. The river sampling in Idaho will begin in 2002.

LANDSCAPE

Landscape conditions will be assessed using a variety of indicators generated in a Geographic Information System (GIS) from spatial data derived from satellite imagery and other data sources. Results of this assessment will assist in the interpretation of the data from both the coastal and surface water components of Western EMAP. Landscape data will provide environmental managers additional data to both identify areas where aquatic resource conditions appear are vulnerable to impairment and potential areas for resource protection.

During 2000 and 2001, the Landscapes team continued developing a series of databases to be used in conjunction with coastal and inland aquatic resources. These data will be used to develop associations between measures of landscape attributes and measures of aquatic condition. One such data set is the National Land Cover Data (NLCD) developed in conjunction with the U.S. Geological Survey.

To date, emphasis has been placed on bringing a series of geographically based data sets together in a format that allows the calculation of various landscape indicators. A core set of indicators is being developed for each state as well as targeted other regions and recorded to CDs for easy distribution.

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